



Synthesis of Soluble Bromo-substituted Perylene Diimides



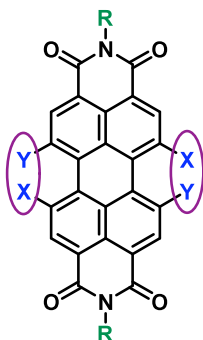
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Introduction

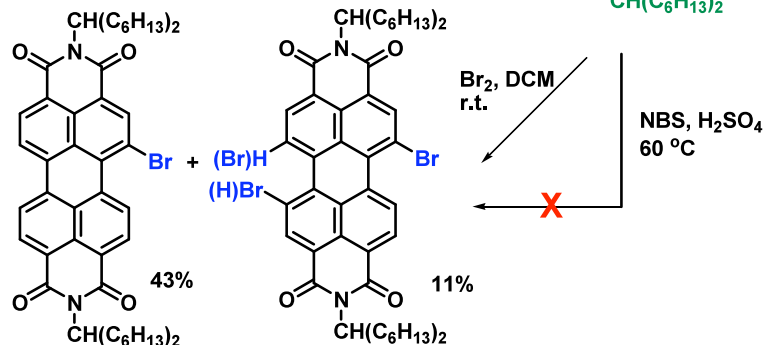
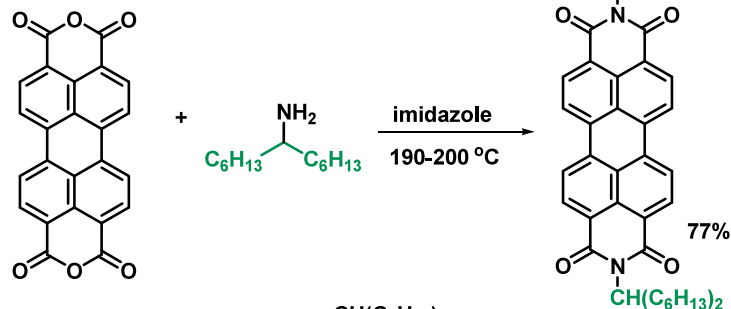
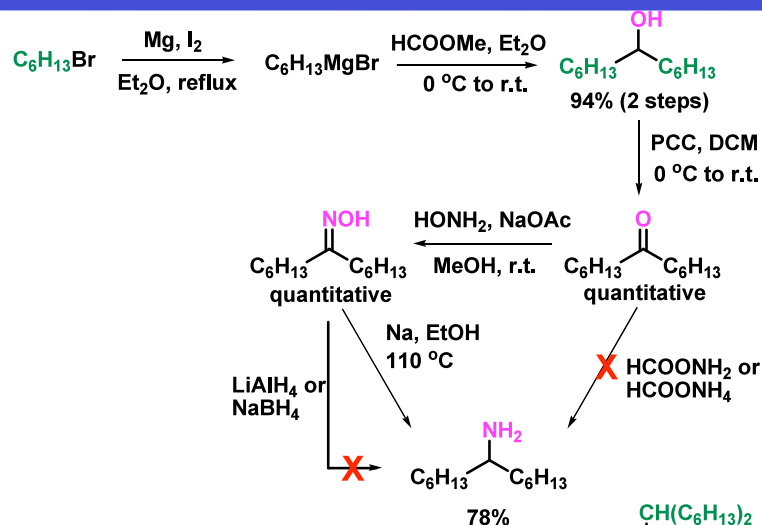
Perylene diimides (PDIs) have low lying frontier molecular orbitals in addition to rigidity and planarity that potentially allow them to function as n-type semiconducting materials.

Synthesis

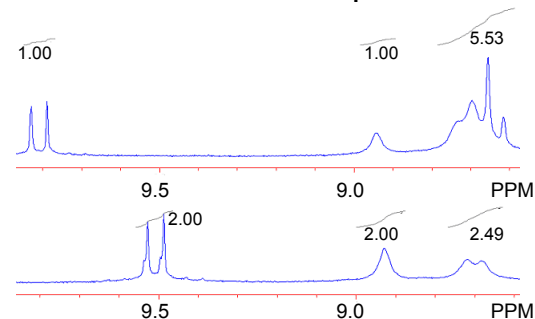
Bay region for chemical modification



By introducing branched alkyl chains at the nitrogen atoms, the solubility can be increased remarkably. Changing the groups in the bay region can alter the LUMO level of the molecule. Bromination in this region activates the rings in order to perform other reactions at those positions.



Mono-brominated product



1,6 and 1,7 di-brominated regioisomers

Future

Future work will optimize the conditions for these reactions and synthesize a variety of perylene diimide derivatives by further functionalizing the bromo-substituted position.

Acknowledgements

- Zhao research group
- University of Michigan Department of Chemistry
- Peking University College of Chemistry and Molecular Engineering
- National Science Foundation

